

WHAT IS CLAIMED IS:

1. An integrated wireless local loop (WLL) and wireless local area network (WLAN) transceiver apparatus which connects a wireless local loop (WLL) base station and a plurality of wireless local area network (WLAN) terminals, comprising:

a WLL transceiver section adapted to connect to the WLL base station to transmit and receive a radio signal to and from the WLL base station;

a WLAN transceiver section adapted to connect to the plurality of WLAN terminals to transmit and receive a radio signal to and from the plurality of WLAN terminals;
and

an antenna unit for receiving the radio signal from the WLL base station or the plurality of WLAN terminals and separately applying the received radio signal to a corresponding processor.

2. The integrated WLL and WLAN transceiver apparatus according to claim 1, wherein the WLL transceiver section further comprises:

a WLL reception processing section adapted to receive the radio signal from the WLL base station and perform a predetermined reception process for the received radio signal for use in the integrated WLL and WLAN transceiver apparatus;

a WLL transmission processing section adapted to perform a predetermined transmission process for the radio signal to be transmitted to the WLL base station; and

a digital baseband processor adapted to perform a digital signal process (DSP) for the radio signal applied thereto from the WLL reception processing section or the radio signal applied to the WLL transmission processing section therefrom.

3. The integrated WLL and WLAN transceiver apparatus according to claim 1, wherein the WLAN transceiver section further comprises:

a WLAN reception processing section adapted to receive the radio signal from the plurality of WLAN terminals and perform a predetermined reception process for the received radio signal for application to the digital baseband processor;

a WLAN transmission processing section adapted to receive a signal from the digital baseband processor and perform a predetermined transmission process for the received signal for radio transmission to the plurality of WLAN terminals; and

a medium access controller (MAC) adapted to supply the signal applied thereto from the digital baseband processor to the WLAN transmission processing section or supply the signal applied thereto from the WLAN reception processing section to the digital baseband processor.

4. The integrated WLL and WLAN transceiver apparatus according to claim 1, wherein the antenna unit comprises:

a duplexer adapted to apply a radio signal received by a first antenna to the WLL reception processing section or the WLAN reception processing section; and

a triplexer adapted to apply a radio signal received by a second antenna to the WLL reception processing section or apply a signal supplied thereto from the WLL transmission processing section or the WLAN transmission processing section to the second antenna.

5. The integrated WLL and WLAN transceiver apparatus according to claim 1, wherein the WLL transceiver section and the WLAN transceiver section share one phase locked loop (PLL) using a plurality of distributors.

6. The integrated WLL and WLAN transceiver apparatus according to claim 1, wherein the integrated WLL and WLAN transceiver apparatus is included in a specific computer, and allows the specific computer to function as a server of the plurality of WLAN terminals.

7. The integrated WLL and WLAN transceiver apparatus according to claim 1, wherein the integrated WLL and WLAN transceiver apparatus includes the duplexer and the triplexer in order to distribute and apply the signals collected by the antennas to each of the WLL and WLAN transceiver sections.

8. The integrated WLL and WLAN transceiver apparatus according to claim 3, wherein the plurality of WLAN terminals uses a conventional WLAN radio transmitter included in the plurality of WLAN terminals as it is.

9. The integrated WLL and WLAN transceiver apparatus according to claim 4, wherein the duplexer is connected to the first antenna used as a receive-only antenna.

10. The integrated WLL and WLAN transceiver apparatus according to claim 1, wherein the antenna unit uses a space diversity antenna for preventing a fading phenomenon of a signal received through a multipath so that the first antenna and the second antenna of the diversity antenna are spaced apart from each other.

11. The integrated WLL and WLAN transceiver apparatus according to claim 10, wherein the space diversity antenna is shared by the WLL transceiver section and the WLAN transceiver section.

12. A WLL-WLAN integrated transmitting and receiving method comprising the steps of:

transmitting a data from a WLL base station and transmitting it to a WLL receiving processor;

transmitting the data which has been subjected to a predetermined procedure in the WLL receiving processor through a digital baseband processor and an MAC to a WLAN transmitting processor; and

transmitting the data which has been subjected to a predetermined procedure in the WLAN transmitting processor to the WLAN terminal.

13. The method of claim 12, wherein the data signal transmitted from the WLL base station is received through a first and a second antennas, and the signal of the first antenna is transmitted through a duplex to the WLL receiving processor and the signal of the second antenna is transmitted through a triplexer to the WLL receiving processor.

14. The method of claim 12, wherein the WLL receiving processor and the WLAN transmitting processor share a phase locked loop by using a plurality of distributors.

15. A WLL-WLAN integrated transmitting and receiving method comprising the steps of:

transmitting a data from a WLAN terminal and transmitting it to a WLAN receiving processor;

transmitting the data which has been subjected to a predetermined procedure in the WLAN receiving processor through a MAC and a digital baseband processor to a WLL transmitting processor; and

transmitting the data which has been subjected to a predetermined procedure in the WLL transmitting processor to the WLL base station.

16. The method of claim 15, wherein the WLL transmitting processor and the WLAN receiving processor share a phase locked loop by using a plurality of splitters.

17. The method of claim 15, wherein the data signal transmitted from the WLAN terminal is received through the first antenna and then transmitted through the duplex to the WLAN receiving processor.

18. An apparatus comprising:

- a WLL transceiver for communicating with a wireless base station;
- a WLAN transceiver for communicating with one or more devices in the network;
- an antenna unit coupled to the WLL transceiver and to the WLAN transceiver;

and

a memory storing data and instructions to enable the processing of data to conform to a WLL signaling scheme and to enable the processing of data to conform to a WLAN signaling scheme.

19. The apparatus of claim 18, wherein the WLL transceiver and the WLAN transceiver share a single phase locked loop and a plurality of distributors.
20. The apparatus of claim 18, wherein the antenna unit includes a space diversity pair of antennas to reduce multipath fading and noise.
21. The apparatus of claim 18, wherein the WLL transceiver further comprises:
a transmitting channel coupled to a first antenna of the antenna unit; and
a dual input receiving channel coupled to a second and third antenna of the antenna unit.
22. The apparatus of claim 21, further comprising a duplexer in the antenna unit, allowing a single antenna to serve both the transmitting channel and also the receiving channel, according to the state of the duplexer.
23. The apparatus of claim 21, wherein the transmitting channel further comprises one or more of the elements from the group consisting of AGC's, modulators, mixers, filters, D/A converters and power amplifiers.

24. The apparatus of claim 21, wherein the receiving channel further comprises one or more of the elements from the group consisting of low noise amplifiers, AGC's, demodulators, mixers, filters, and A/D converters.

25. The apparatus of claim 21, further comprising a digital base band processor, which processes data such that the data conforms to a WLL signaling scheme.

26. The apparatus of claim 18, wherein the WLAN transceiver further comprises:
a transmitting channel coupled to a fourth antenna of the antenna unit; and
a receiving channel coupled to a fifth and a sixth antenna of the antenna unit.

27. The apparatus of claim 26, wherein the antenna unit comprises two antennas with a duplexer and a triplexer to provide the appropriate connections to the receiving channels and transmitting channels of the apparatus.

28. The apparatus of claim 26, wherein the transmitting channel of the WLAN transceiver further comprises one or more of the elements from the group consisting of AGC's, modulators, mixers, filters, D/A converters and power amplifiers.

29. The apparatus of claim 26, wherein the receiving channel WLAN transceiver further comprises one or more of the elements from the group consisting of low noise amplifiers, AGC's, demodulators, mixers, filters, and D/A converters.

30. The apparatus of claim 26, further comprising a medium access controller, which applies digital signal processing techniques to data such that the data conforms to a WLAN signaling scheme.

31. The apparatus of claim 30, wherein the medium access controller is further equipped to process the digital data for transfer to or from the WLL transceiver.

32. A system for providing a core network access via a wireless local area network, the system comprising:

- a WLL base station connected to the core network;

- a plurality of devices connected in a wireless LAN; and

- an apparatus for transferring data from the WLL base station to or from the plurality of devices connected to the WLAN, said apparatus including means for translating the data between WLAN signaling protocol and the WLL signaling protocol.